



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/737,254	12/15/2003	Shengming Huang	50019.268US01/P05726	5822

23552 7590 05/06/2005

MERCHANT & GOULD PC  
P.O. BOX 2903  
MINNEAPOLIS, MN 55402-0903

EXAMINER

CUNNINGHAM, TERRY D

ART UNIT	PAPER NUMBER
----------	--------------

2816

DATE MAILED: 05/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/737,254

Applicant(s)

HUANG ET AL

Examiner

Terry D. Cunningham

Art Unit

2816

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 March 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5-8 and 12-20 is/are rejected.
- 7) ☒ Claim(s) 2-4 and 9-11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2816

## **DETAILED ACTION**

### ***Summary of changes in this action***

1. Examiner as found Applicant's remarks concerning the indefiniteness rejection to claim 2 to be persuasive. Thus, this rejection is hereby overcome.
2. Examiner as found Applicant's remarks concerning the art rejection to claims 2 and 3 to be persuasive. Thus, this rejection is hereby overcome.

In the outstanding art rejections, while Examiner is of the contention that the claims are substantially similar but differing in breadth or claim type, the rejections will be rewritten separately to provide clarity.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5-8 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by D'Angelo (USPN 6,166,530).

With respect to claims 1, 5-8 and 12-16, D'Angelo discloses, in Fig. 5, a circuit comprising: "a power device (102 and 114)"; "a load (104)"; "a current sense circuit (148-152)"; "a first transistor (110)"; "a second transistor (one or more of transistors 120)"; "a comparator (140-146)"; and "a level shifter (154)", all connected and operating similarly as recited by Applicant.

Examiner has fully considered Applicant's remarks for the above rejection and has not found them to be persuasive. Applicant remarks "Transistors 148 - 152 are not a current sense

Art Unit: 2816

circuit as stated in the office action and instead these transistors are diode connected devices that operate as a voltage divider circuit". While diodes 148-152 are "a voltage divider circuit", it is still more than reasonable to consider such to be a "current sense circuit". The voltage provided from diodes 148-152 will inherently vary responsive to changes in the current provided therethrough. With respect to transistor 110, it is clear that such is on during steady state since the gate voltage will be lower than the drain voltage. When the output is shorted, the voltage at the source of 110 will necessarily be pulled down when (i.e., at the same time as) transistors 140-146 assert the "short circuit detection signal", causing a high to be output from comparator 114. This, in turn, will cause transistor 102 to turn off. With respect to nodes 128-136, the typographical error is noted and corrected in the above rejection. With respect to transistor 154, contrary to Applicant's remarks, it is inherent that such will provide a voltage drop when on. This would more than reasonably be deemed to be a "level shift".

Further, Applicant has provided what is purported as being a "simplified diagram" of "FIG. 5 from the D'Angelo reference". However, Applicant has provided no evidence to support this assertion. Thus, discussion concerning the diagram are not deemed persuasive.

With respect to claims 13-16, D'Angelo discloses, in Fig. 5, a circuit comprising: "a power device (102 and 114)"; "a load (104)"; "a current sense means (148-152)"; "a disabling means (110)"; "a recovery current means (140, through the gate-source region)"; "a comparator (146-146)"; and "a minimum over-drive means (154)", all connected and operating similarly as recited by Applicant.

With respect to claims 17-20, D'Angelo discloses, in Fig. 5, a circuit having "a power device (102 and 114)" and "a load (104)" that will provide the method comprising: "sensing a current (with 148-152)"; "sensing an output voltage (will output voltage line VOUT)";

Art Unit: 2816

“comparing the sense signal with the sensed output voltage (with 140-146)”; “asserting a short-circuit detection signal (with 140-146 responsive to the comparison)”; “disabling the power device (with 110)”; “enabling a current source (112)”; “detecting when the short-circuit condition is removed (with 148-152)”; “enabling the power device (when VREF falls below PILOT)”; and “maintaining a minimum overdrive condition (with 158)”.

With respect to claim 18, clearly the thresholds of 148-154 will vary responsive to changes in temperature.

Claims 2-4 and 9-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 2816

***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terry Cunningham whose telephone number is 571-272-1742.

The examiner can normally be reached on Monday-Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy P. Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TC  
May 4, 2005

  
Terry D. Cunningham  
Primary Examiner  
Art Unit 2816